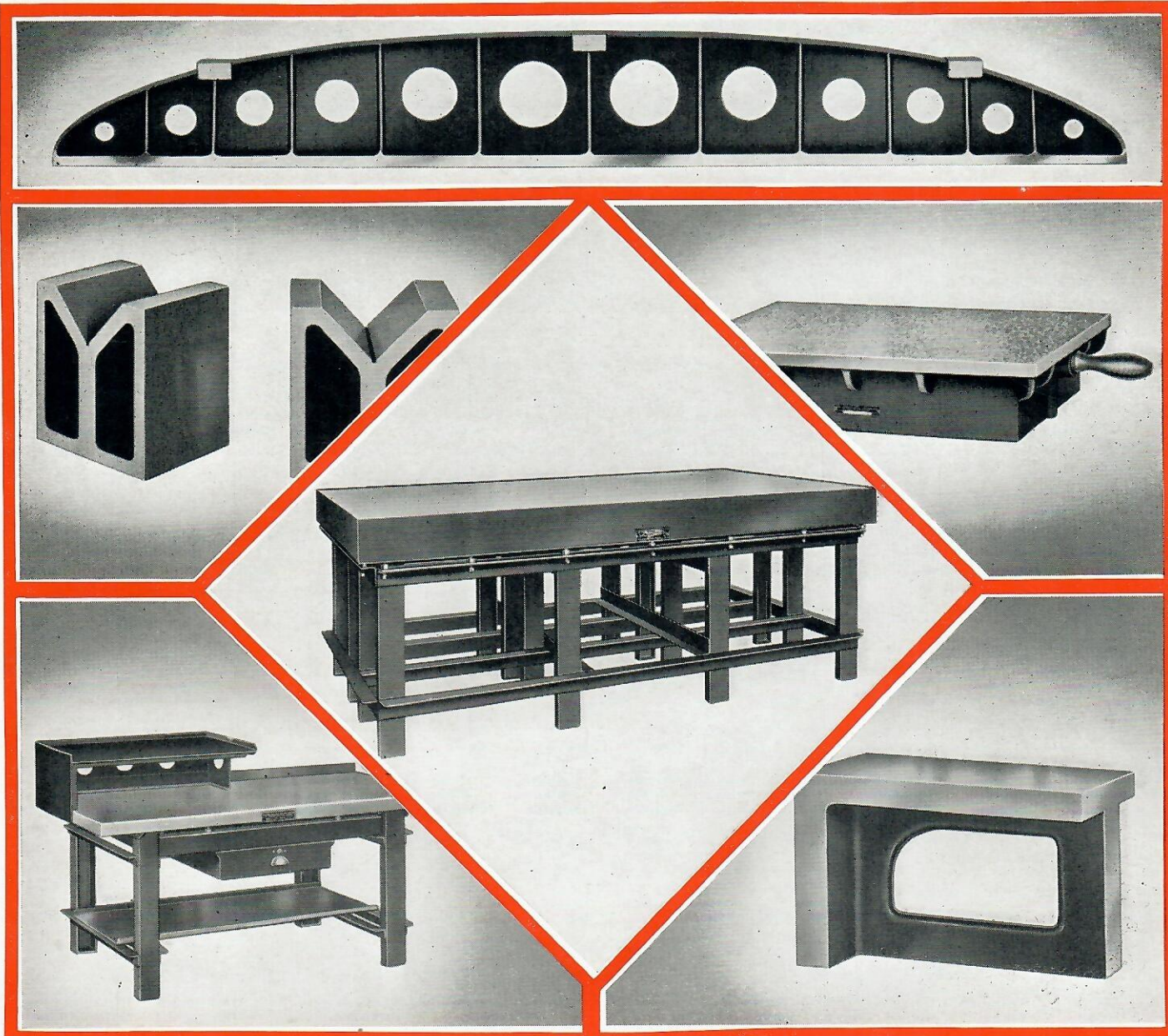


Challenge

CATALOG No. 836

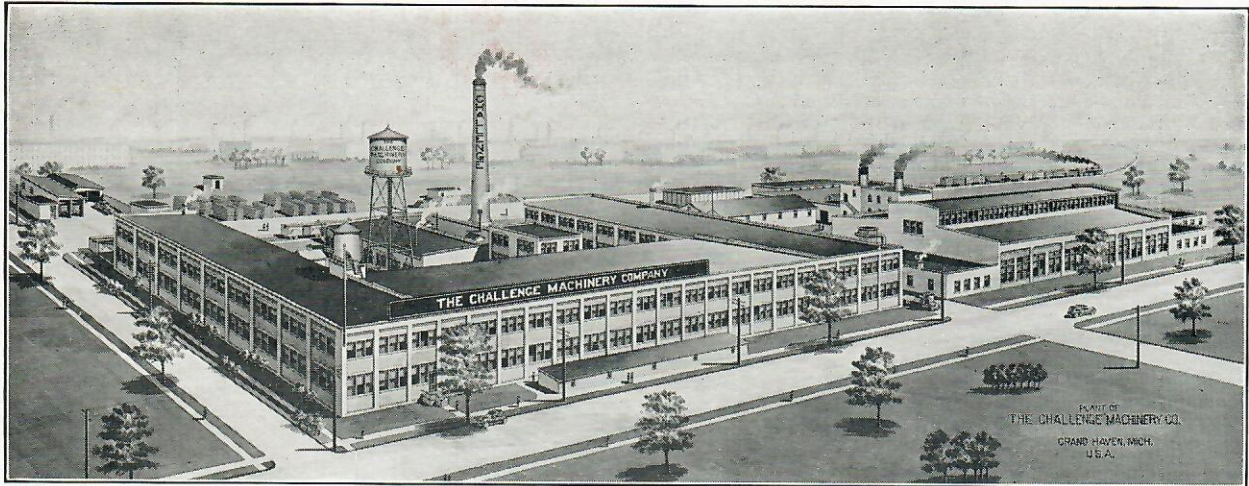
**PRECISION EQUIPMENT FOR
TOOL AND MACHINE INDUSTRIES**



J. G. CHRISTOPHER CO.

416-422 E. BAY ST. JACKSONVILLE 1, FLA.

Challenge Precision Equipment for Tool and Machine Industries



● Illustrated and described in this catalog are the Challenge products for industrial concerns—time-saving devices for tool and machine shops—precision equipment for layout, inspection, assembly, and general production.

The Challenge Machinery Company occupies a large, up-to-date plant, including a modern, well-equipped foundry. The buildings and grounds cover more than five acres, and several hundred workers are regularly employed.

The Challenge plant is ideally situated, having a choice of rail, water, or highway transportation, each providing fast service to all parts of the country.

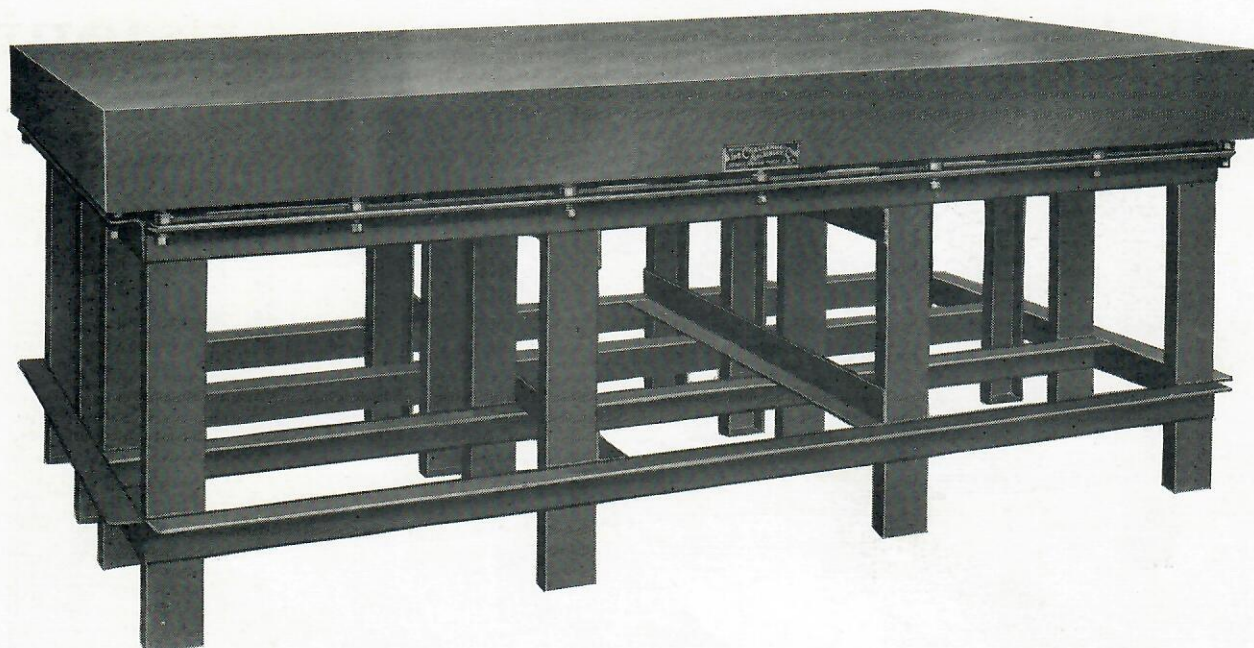
From drafting room to assembly lines, every unit of the Challenge plant is equipped with the most modern machinery obtainable, much of it specially designed for specific purposes. The range of Challenge plant capacity runs from "vest-pocket" equipment up to huge surface plates and giant castings.

Challenge personnel includes a staff of experienced engineers who devote their time and attention to industrial production problems. Invention, development, and improvement of Challenge products is a constant procedure that has been going on at this plant for over half a century. Consult with Challenge engineers on immediate or future problems.



CHALLENGE *Semi-Steel* LAYOUT SURFACE PLATE

SIX INCHES THICK *



for Layout, Inspection or Assembly Lines...

Challenge Semi-Steel Layout Surface Plates are built of fine-grade special analysis semi-steel perfectly smooth and square. These Layout Surface Plates provide a true and rigid surface for layout, inspection or assembly work. Made in sixteen standard sizes listed below—other sizes to order.

On special order, plates will be grooved and keyed so that two or more can be assembled and mounted into one complete unit—for example—four 54x144" plates into one huge unit 108x288".

Special Surface Plates, with "Tee-Slots", or with grooving, scoring or machining for

checking and assembly operations, are available on special order.

ALL-STEEL STAND

Challenge Semi-Steel Layout Surface Plates (in sizes listed below in right hand column) are available with the sturdy arc-welded, all-steel Stand. This makes an ideal base with the strength and solidity of a one-piece unit. The Stand is equipped with lock leveling screws which enable the user to level his plate quickly and lock it securely. The number of screws varies from 19 on the 30x60" size to 59 on the 54x144" size.

SPECIFICATIONS

SIX INCHES THICK — PLATES ONLY

Precision Ground		
Stock Number	Size Inches	Shipping Weight
LG-1218	12x18	168 lbs.
LG-1618	16x18	205 lbs.
LG-1818	18x18	225 lbs.
LG-1824	18x24	250 lbs.
LG-1836	18x36	385 lbs.
LG-3060	30x60	1027 lbs.
LG-3668	36x68	1375 lbs.
LG-3672	36x72	1450 lbs.

Planer Finish		
Stock Number	Size Inches	Shipping Weight
LO-3060	30x60	1027 lbs.
LO-3668	36x68	1375 lbs.
LO-3672	36x72	1450 lbs.
LO-4896	48x96	2500 lbs.
LO-48120	48x120	3200 lbs.
LO-5496	54x96	2740 lbs.
LO-54120	54x120	3300 lbs.
LO-54144	54x144	4145 lbs.

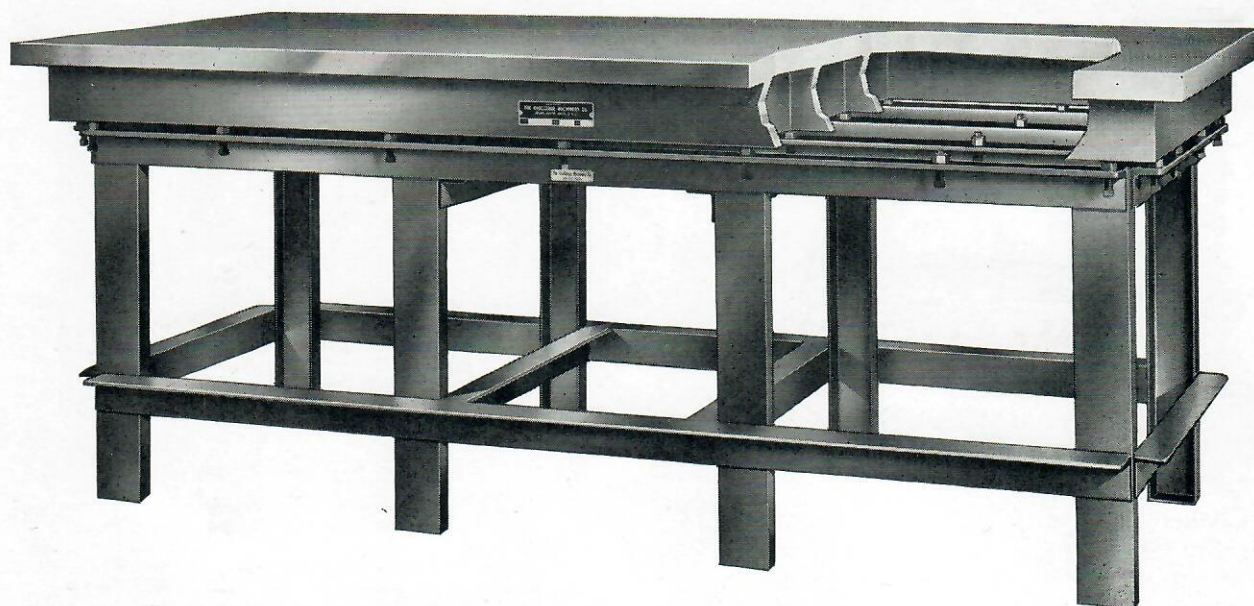
Six-Inch Plates on 30-Inch Steel Stand

Stock Number	Size Inches	Shipping Weight
LO-3060S	30x60	1415 lbs.
LO-3668S	36x68	1700 lbs.
LO-3672S	36x72	1825 lbs.
LO-4896S	48x96	3300 lbs.
LO-48120S	48x120	4100 lbs.
LO-5496S	54x96	3560 lbs.
LO-54120S	54x120	4300 lbs.
LO-54144S	54x144	5345 lbs.

* Six Inches is Standard — Plates Eight Inches Thick on Special Order.

CHALLENGE "CLAMP EDGE" LAYOUT PLATE

SEMI-STEEL



for Easy Locking of Job to Plate...

Challenge Clamp Edge Layout Plates, with an overhanging edge on all four sides, are ideal for securely locking a job in practically any position when layout or assembly operations are required. The underside of the Clamp Edge is carefully machined so that it is free from ribs thus permitting the use of clamps at any point along the sides or ends of the Plate.

Built of fine-grade special analysis semi-steel, planed perfectly smooth and square. The high quality of materials and workmanship results in dependably meeting the requirements of many

types of work. Made in five standard sizes listed below—other sizes to order.

ALL-STEEL STAND

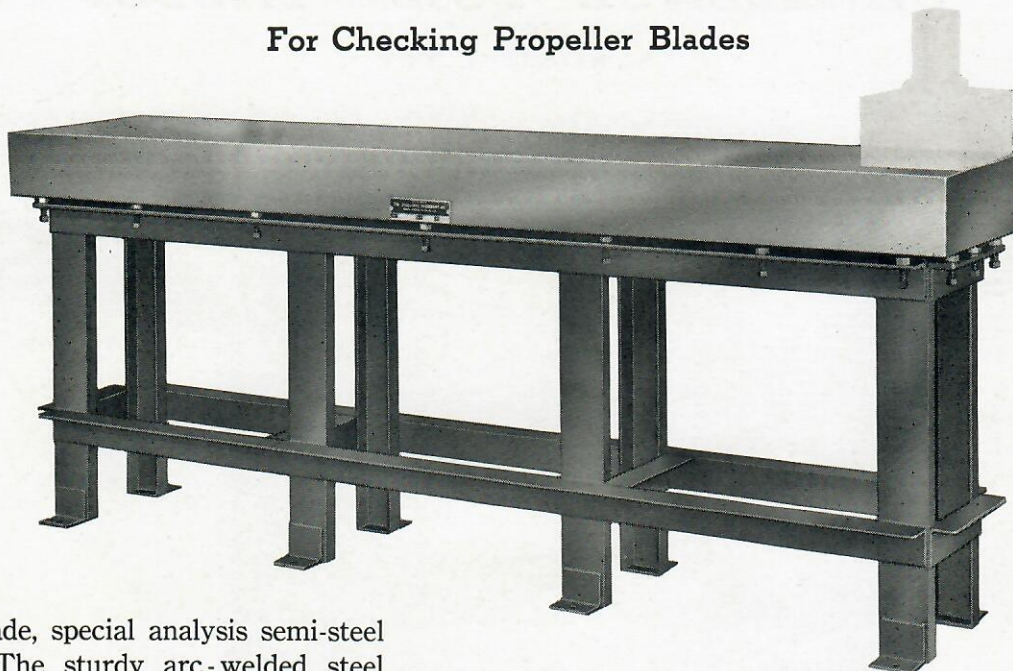
Challenge Clamp Edge Layout Plates are complete with the sturdy, arc-welded, all-steel Stand. This makes an ideal base with the strength and solidity of a one-piece unit. The Stand is equipped with lock leveling screws which enable the user to level his plate quickly and lock it securely. The number of screws vary from 28 on the 36x72" size to 59 on the 54x144" size.

SPECIFICATIONS

Stock No.	Size of Top	Size of Base	Height	Shipping Weight
LL-3672	36x72 ins.	32x68 ins.	36 ins.	1800 lbs.
LL-4096	40x96 ins.	36x92 ins.	36 ins.	2500 lbs.
LL-4896	48x96 ins.	44x92 ins.	36 ins.	3100 lbs.
LL-48120	48x120 ins.	44x116 ins.	36 ins.	4000 lbs.
LL-54144	54x144 ins.	50x140 ins.	36 ins.	5000 lbs.

CHALLENGE *Semi-Steel* READING TABLES

For Checking Propeller Blades

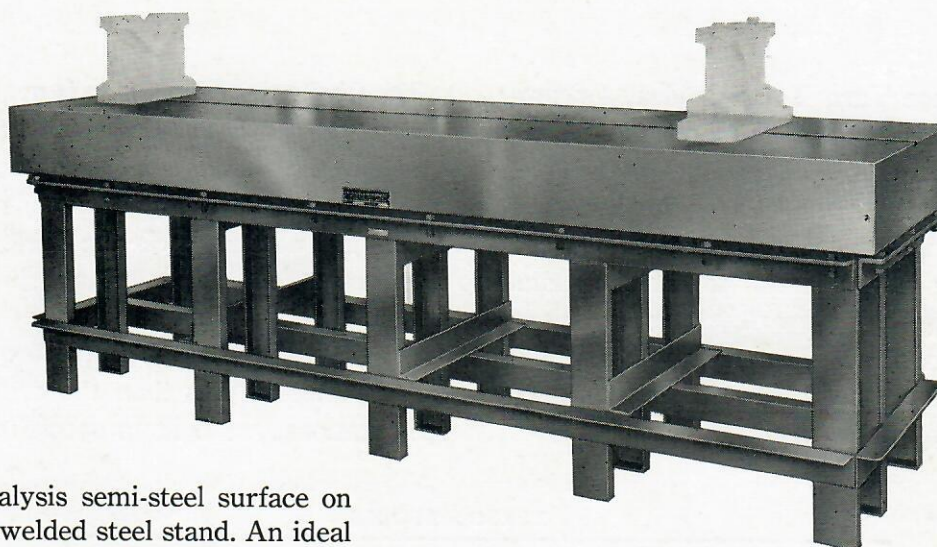


Fine-grade, special analysis semi-steel surface. The sturdy arc-welded steel stand is equipped with lock leveling screws. Table can be scribed or graduated to your specifications. Spindle can be located either in the middle or at end. Two standard sizes. Others to order.

SPECIFICATIONS

Stock Number	Size	Top Thickness	Height of Stand	Shipping Weight
RT-1896	18x96 ins.	4 ins.	32 ins.	1180 lbs.
RT-18144	18x144 ins.	6 ins.	30 ins.	2185 lbs.

CHALLENGE *Semi-Steel* CHECKING TABLES



Special analysis semi-steel surface on a sturdy arc-welded steel stand. An ideal table for checking and assembly work. The Stand is equipped with lock leveling screws. A standard T-Slot runs the entire length of the top permitting the mounting of V-Blocks or similar equipment. Two top thicknesses—six or eight inches.

SPECIFICATIONS

Stock Number	Size	Top Thickness	Height of Stand	Shipping Weight
CT-30110A	30x110 ins.	6 ins.	30 ins.	2580 lbs.
CT-30110B	30x110 ins.	8 ins.	28 ins.	2925 lbs.

CHALLENGE TURN TABLES

SEMI-STEEL TOP



The Challenge Turn Table is ideal for progressive mounting of two or more units at one time and for continuous production. For example: a radial drill can perform the drilling operation while another unit is being mounted and locked into place. It also is useful to enlarge radial drill capacity and for all work where turning of the table is desired. Four T-Slots, carefully machined from the solid, run the entire length of the semi-steel table top.

The Challenge Turn Table is available in two sizes in either Stand or Platen models. Illustrated is the Stand model mounted on a cast iron base and showing the single motion locking lever which securely locks the Table to the Stand. The braces on the Stand are just the right height for a standard lift truck.

A special rim lock is provided on the Platen model. Sizes, other than those shown in the specifications, are built to special order.

SPECIFICATIONS

Stock No.	Top Size	Style	Height From Floor	Thickness of Top	Shipping Weight
TT-3028	30x30 ins.	Stand Model	28 ins.	3 ins.	850 lbs.
TT-309	30x30 ins.	Platen Model	9 ins.	3 ins.	725 lbs.
TT-4228	42x42 ins.	Stand Model	28 ins.	4 ins.	1450 lbs.
TT-4234	42x42 ins.	Stand Model	34 ins.	4 ins.	1475 lbs.
TT-429	42x42 ins.	Platen Model	9 ins.	4 ins.	1275 lbs.

Challenge Work Benches

(CAST-IRON TOP)

Challenge Work Benches are ruggedly built and they have what it takes for faster and full-time production. **Cast Iron Top** stays smooth and accurate; will not warp, shrink, splinter, or burn. The top and all four sides are carefully machined at right angles. **Tool Box Shelf** that provides a place for the tool box where it can be opened without moving anything on the bench top . . . **Steel Drawer** with strong lock.

Challenge Work Benches are equipped with **leveling screws** on two full-length braces under the table, so that the working surface can be kept perfectly level at all times. The legs are strong and solidly braced to provide a firm foundation. The braces are high enough to permit the use of a standard lift truck if the bench is to be moved. These benches are made in four standard sizes and three styles as illustrated.



Challenge Work Bench with Cast-Iron Top, Challenge Tool Box Shelf, and Steel Drawer with Pilfer-Proof Lock. Shipped knocked down.

No.	Size of Top	Table Height	Shipping Wt.
2591	28x48x2	34 in.	585 lbs.
2592	28x60x2	34 in.	675 lbs.
2593	*28x72x2	34 in.	780 lbs.
2594	*28x84x2	34 in.	970 lbs.



Challenge Work Bench with Cast-Iron Top, and Challenge Tool Box Shelf. Shipped knocked down.

No.	Size of Top	Table Height	Shipping Wt.
2581	28x48x2	34 in.	560 lbs.
2582	28x60x2	34 in.	650 lbs.
2583	*28x72x2	34 in.	775 lbs.
2584	*28x84x2	34 in.	945 lbs.

*28x72-inch and 28x84-inch sizes have six legs.



Challenge Work Bench with Cast-Iron Top. Shipped knocked down.

No.	Size of Top	Table Height	Shipping Wt.
2571	28x48x2	34 in.	550 lbs.
2572	28x60x2	34 in.	640 lbs.
2573	*28x72x2	34 in.	765 lbs.
2574	*28x84x2	34 in.	935 lbs.

Challenge Tool Box Shelf is sold separately for all Challenge Work Benches on which it is not listed as standard equipment.

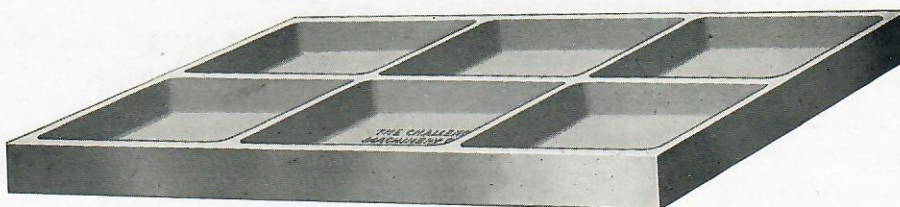
CHALLENGE *Semi-Steel* BENCH PLATES

PLANER FINISH



Top, bottom and all four sides are carefully planed. Under side has heavy ribs.

***Rugged—
Smooth—
Accurate***



For a wide variety of layout and assembly work, these Challenge Semi-Steel Bench Plates provide a smooth, rigid, dependable surface. They eliminate many difficulties that arise from using unreliable, bumpy, bulging plates, and they prove their economy by promoting speed and efficiency in production.

Challenge Semi-Steel Bench Plates are ruggedly built of special analysis semi-steel and are machined with accuracy. The top and sides are at right angles and will remain that way under heavy pounding, shocks, and hard wear.

The undersides have strong cross ribbing to support the top surface and prevent sagging.

Challenge Semi-Steel Bench Plates are recommended for many uses—for model-work and pattern makers' benches, for mounting bench lathes, for nailing slabs in shipping rooms, and for other purposes in garages, machine shops, etc.

These plates are made both two and four inches thick, in a full range of sizes as listed below. Other sizes, not listed, can be made to order. Ask for prices on the sizes you need.

TWO INCHES THICK

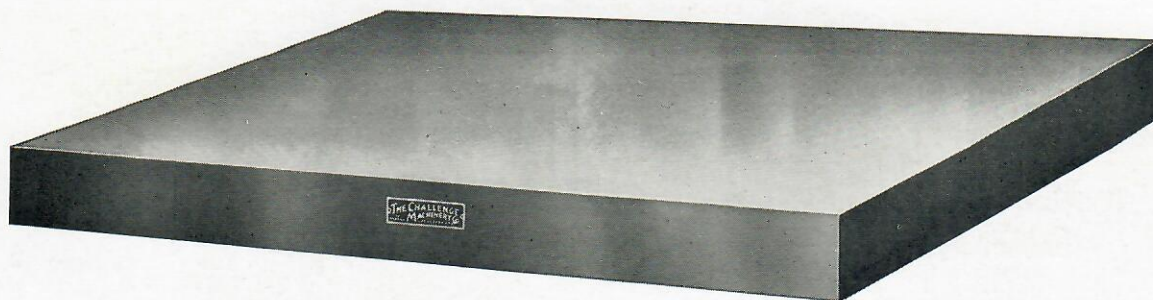
Stock Number	Size Inches	Shipping Weight
P-24242	24x24	140 lbs.
P-24362	24x36	230 lbs.
P-24602	24x60	380 lbs.
P-24722	24x72	480 lbs.
P-28482	28x48	400 lbs.
P-28602	28x60	480 lbs.
P-28722	28x72	535 lbs.
P-28842	28x84	690 lbs.
P-30482	30x48	480 lbs.
P-30602	30x60	556 lbs.
P-30722	30x72	650 lbs.
P-30842	30x84	740 lbs.
P-36482	36x48	445 lbs.
P-36602	36x60	540 lbs.
P-36722	36x72	645 lbs.
P-36842	36x84	750 lbs.

FOUR INCHES THICK

Stock Number	Size Inches	Shipping Weight
P-24244	24x24	255 lbs.
P-24364	24x36	320 lbs.
P-24604	24x60	560 lbs.
P-24724	24x72	680 lbs.
P-30484	30x48	630 lbs.
P-30604	30x60	780 lbs.
P-30724	30x72	940 lbs.
P-30844	30x84	1100 lbs.
P-36484	36x48	725 lbs.
P-36604	36x60	950 lbs.
P-36724	36x72	1125 lbs.
P-36844	36x84	1384 lbs.
P-48484	48x48	1000 lbs.
P-48604	48x60	1200 lbs.
P-48724	48x72	1400 lbs.

CHALLENGE *Semi-Steel* BENCH PLATES

PRECISION GROUND



These precision ground bench plates provide an accurate surface for many types of work — assembly, layout and inspection, and tool room operations.

Challenge Precision Ground Bench Plates are made of special analysis semi-steel with all sides machined at right angles to the top surface. They are designed and built to provide rigidity and strength, as well as wear resistance, and will retain their accuracy under constant use. The sturdy construction of these plates assures a smooth, solid working surface that helps to increase speed and maintain precision in production.

Challenge Precision Ground Bench Plates are made in a wide range of sizes, two and four inches thick. The standard range is from 8x10 inches up to and including 36x84 inches. Other sizes made to order.

There are many places where these precision ground plates can be used for a wide variety of operations in the modern industrial plant. They have definitely proved their value as an aid to accuracy and a means of speeding up production all along the line. Select the sizes you need from the list below or ask for information on special sizes.

TWO INCHES THICK

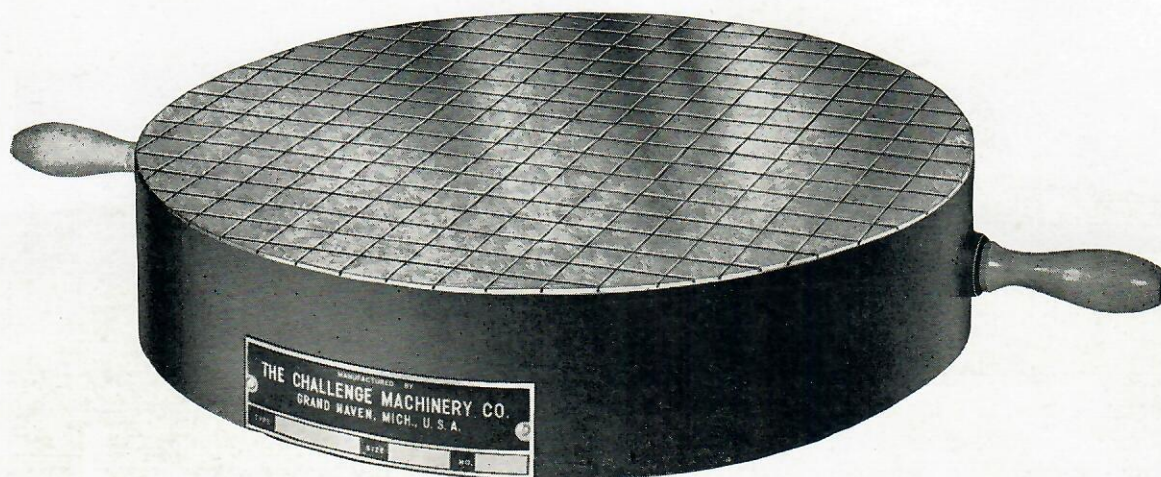
Stock Number	Size Inches	Shipping Weight
G-8102	8x10	27 lbs.
G-10142	10x14	37 lbs.
G-12122	12x12	38 lbs.
G-12182	12x18	50 lbs.
G-14182	14x18	68 lbs.
G-16182	16x18	73 lbs.
G-16242	16x24	120 lbs.
G-18182	18x18	89 lbs.
G-18242	18x24	130 lbs.
G-18302	18x30	141 lbs.
G-18362	18x36	167 lbs.
G-18482	18x48	225 lbs.
G-24242	24x24	140 lbs.
G-24362	24x36	230 lbs.
G-24602	24x60	380 lbs.
G-24722	24x72	480 lbs.
G-28482	28x48	325 lbs.
G-28602	28x60	410 lbs.
G-28722	28x72	525 lbs.
G-28842	28x84	686 lbs.
G-30482	30x48	480 lbs.
G-30602	30x60	556 lbs.
G-30722	30x72	650 lbs.
G-30842	30x84	740 lbs.
G-36482	36x48	445 lbs.
G-36602	36x60	560 lbs.
G-36722	36x72	670 lbs.
G-36842	36x84	750 lbs.

FOUR INCHES THICK

Stock Number	Size Inches	Shipping Weight
G-12124	12x12	75 lbs.
G-12184	12x18	115 lbs.
G-14184	14x18	125 lbs.
G-16204	16x20	135 lbs.
G-16484	16x48	380 lbs.
G-18184	18x18	160 lbs.
G-18244	18x24	210 lbs.
G-18304	18x30	275 lbs.
G-18364	18x36	330 lbs.
G-18604	18x60	530 lbs.
G-18724	18x72	620 lbs.
G-24244	24x24	255 lbs.
G-24364	24x36	320 lbs.
G-24604	24x60	560 lbs.
G-24724	24x72	680 lbs.
G-30484	30x48	590 lbs.
G-30604	30x60	680 lbs.
G-30724	30x72	810 lbs.
G-30844	30x84	1000 lbs.
G-36484	36x48	725 lbs.
G-36604	36x60	950 lbs.
G-36724	36x72	1125 lbs.
G-36844	36x84	1384 lbs.

CHALLENGE ROUND LAPPING PLATES

SEMI - STEEL



Precision Ground or Hand Scraped

Challenge Round Lapping Plates are made to the identical exacting standards of all Challenge equipment. They are made of fine-grain special analysis semi-steel, specially heat-treated to overcome strains and to avoid distortion. Built to retain their accurate surface. Grooved in two directions, one set of lines running 90 degrees

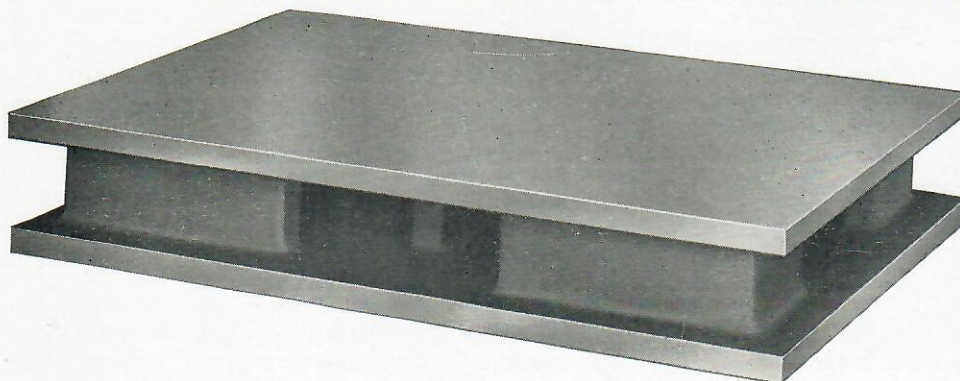
to the other set— $\frac{1}{16}$ -inch grooves, $\frac{1}{2}$ -inch apart. Two wooden handles to facilitate handling. Larger sizes either hand scraped or precision ground, are available on special order.

SPECIFICATIONS

Precision Ground...No. RL - 184
Hand Scraped.....No. RLS-184
Size, diameter.....18 inches
Surface depth.....4 inches
Shipping weight.....127 lbs.

CHALLENGE DUPLEX BENCH BLOCKS

PRECISION GROUND—GROOVED FOR LAPPING—OR HAND SCRAPED



- DB 10P14—Smooth on both sides.
- DB 10I14—Smooth on one side and grooved for lapping $\frac{1}{2}$ -inch mesh on the other.
- DB 10L14—Grooved for lapping $\frac{1}{2}$ -inch mesh both sides.
- Also furnished with either or both sides hand scraped.

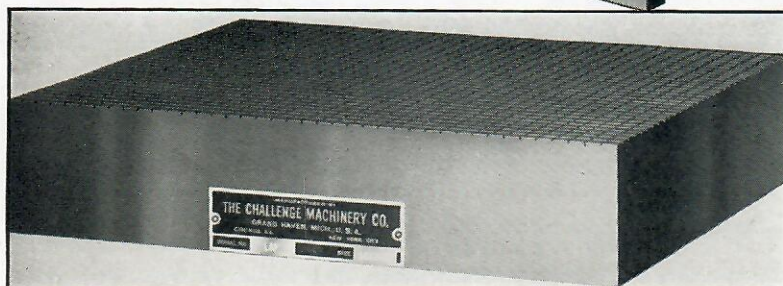
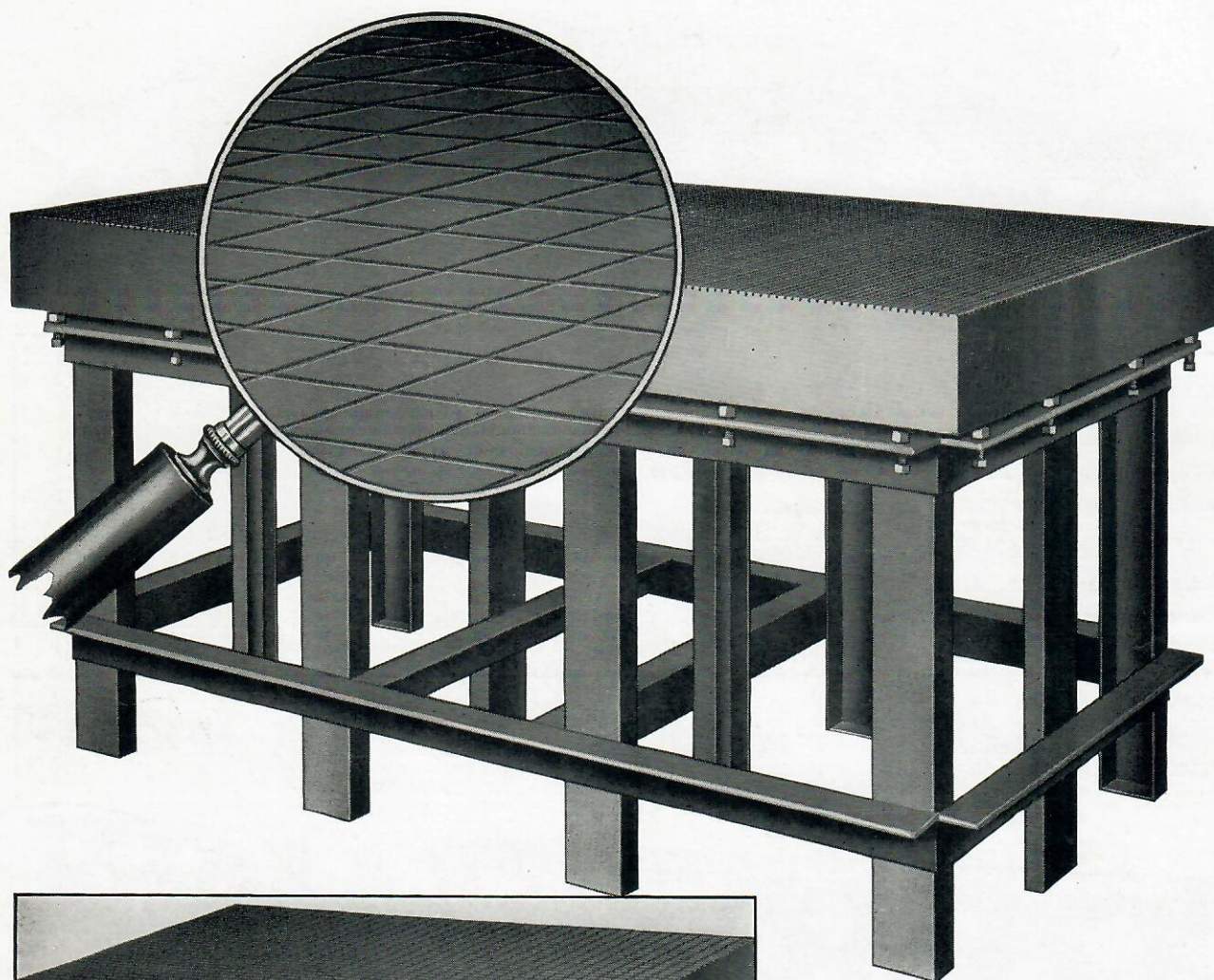
Challenge Duplex Bench Blocks are made of special analysis semi-steel, carefully ribbed internally to assure strength. They are furnished with one surface smooth and the other grooved in $\frac{1}{2}$ -inch widths for accurate lapping of metal-to-metal joints . . . Or, they may be had with both sides smooth, in which case one surface may be used for working purposes and the other held in reserve for layout, assembly and inspection. The third style has both surfaces precisely grooved for lapping $\frac{1}{2}$ -inch mesh.

Challenge Duplex Bench Blocks are **precision ground**, both top and bottom, smooth or grooved surfaces. Also furnished at extra cost with either or both surfaces hand scraped.

SPECIFICATIONS

Stock Number	Size, Inches	Shipping Weight
DB 10P14	10 x 14 x $2\frac{3}{4}$	43 lbs.
DB 10I14	10 x 14 x $2\frac{3}{4}$	43 lbs.
DB 10L14	10 x 14 x $2\frac{3}{4}$	43 lbs.

CHALLENGE *Semi-Steel* LAPPING PLATE



**for Accurate
Lapping of
Delicate Joints**

● Joints required to hold oil are lapped properly and easily by using a Challenge Lapping Plate, specifically designed to assure a perfect fit when lapping metal-to-metal joints on which no sealer of any kind is used.

Made of fine-grade special analysis semi-steel, carefully machined, these plates are ideally suited for use on crank cases, cylinder heads, end bells, gear housings, and other parts which must be lapped perfectly to avoid possible oil leaks.

Challenge Lapping Plates have $\frac{1}{16}$ -inch grooves, $\frac{1}{2}$ -inch apart, running the full length and width of the surface. Mounted on a Challenge all-steel, arc-welded stand, they will retain their accuracy through long years of profitable use.

The arc-welded Stand (optional) is equipped with closely spaced lock leveling screws assuring perfect level at all times.

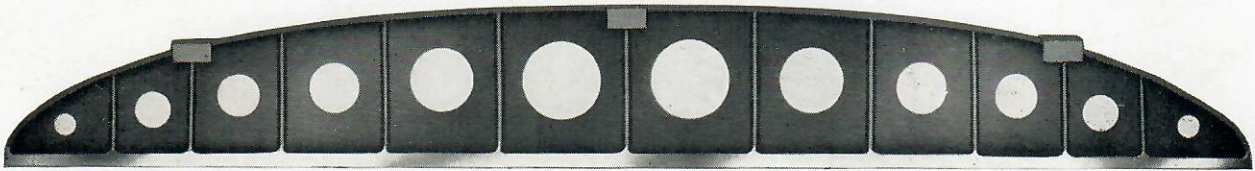
SPECIFICATIONS

No.	Description	Size Inches	Shipping Weight
LA-1218	Plate only.....	12x18x4	115
LA-1824	Plate only.....	18x24x4	210
LA-2424	Plate only.....	24x24x4	255
LA-2436	Plate only.....	24x36x4	350
LA-2448	Plate only.....	24x48x4	470
LA-2460	Plate only.....	24x60x4	625
LA-3672	Plate only.....	36x72x6	1450
LA-2436S	Plate with 32-in. Stand....	24x36x4	545
LA-2448S	Plate with 32-in. Stand....	24x48x4	750
LA-2460S	Plate with 32-in. Stand....	24x60x4	1025
LA-3672S	Plate with 30-in. Stand....	36x72x6	1825

(Other sizes made to order).

CHALLENGE *Semi-Steel* STRAIGHT EDGES

HAND-SCRAPED



Made of a special analysis semi-steel, Challenge hand-scraped Straight Edges are scientifically shaped and ribbed to retain a straight line.

Challenge Straight Edges are indispensable in scraping planer and lathe bed ways and other tasks requiring a true scraped surface.

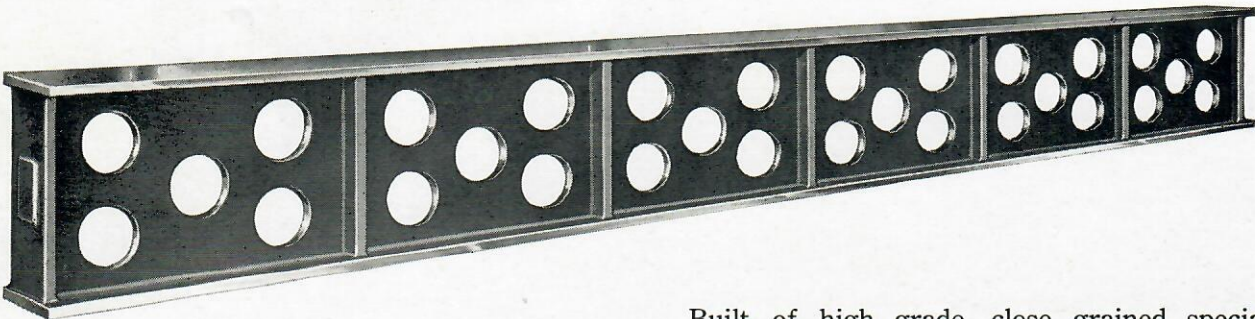
A felt-lined wooden protective cover is furnished with each Straight Edge. Made in 10 standard sizes, as listed.

SPECIFICATIONS

Stock No.	Size, Inches	Height	Shipping Weight
SE - 18	18 x 1½	4 ins.	12 lbs.
SE - 24	24 x 1⅝	5 ins.	20 lbs.
SE - 30	30 x 1¾	5 ins.	25 lbs.
SE - 36	36 x 1⅞	6 ins.	30 lbs.
SE - 48	48 x 2	6 ins.	45 lbs.
SE - 60	60 x 2⅛	10 ins.	90 lbs.
SE - 72	72 x 2⅜	12 ins.	135 lbs.
SE - 84	84 x 2¾	12 ins.	185 lbs.
SE - 96	96 x 2¾	12 ins.	200 lbs.
SE - 120	120 x 2¾	20 ins.	350 lbs.

CHALLENGE PARALLEL STRAIGHT EDGES

HAND-SCRAPED OR PRECISION GROUND



Challenge Parallel Straight Edges are indispensable for the leveling and setting up of machine units in the laying out of production and assembly lines.

Specially designed for the inspection of alignment and bearing surfaces of machine tools and fixtures.

Built of high grade, close grained special analysis semi-steel, strongly ribbed to retain rigid accuracy for perfect leveling.

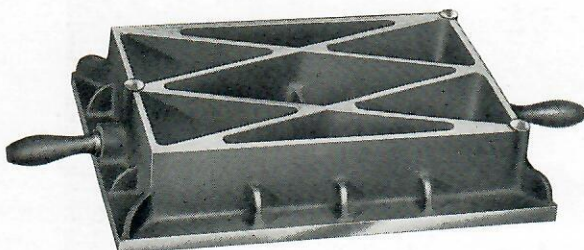
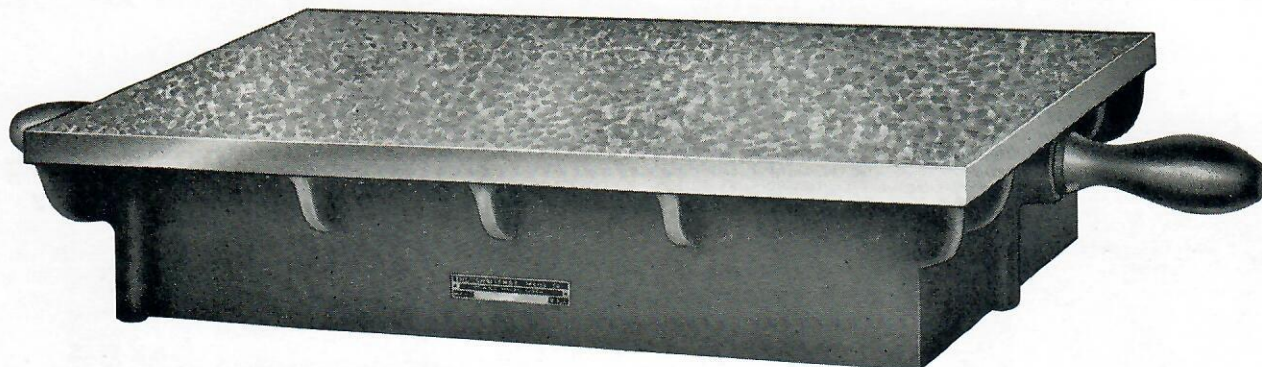
Cored for lightness in handling ease. Top and bottom are planed and either hand-scraped or precision ground.

Furnished in four standard sizes as listed below. Other sizes made to order.

SPECIFICATIONS

Stock Number		Length	Width	Height	Shipping Weight
Hand Scraped	Precision Ground				
PSE-36	PSE-36G	36 ins.	2½ ins.	8 ins.	75 lbs.
PSE-48	PSE-48G	48 ins.	2½ ins.	8 ins.	90 lbs.
PSE-60	PSE-60G	60 ins.	2½ ins.	8 ins.	125 lbs.
PSE-72	PSE-72G	72 ins.	2½ ins.	8 ins.	170 lbs.

CHALLENGE *Semi-Steel* SURFACE PLATES



Challenge Surface Plates are designed for rigidity and strength, as well as wear resistance. Will not give or sag under load. Made of fine-grain special analysis semi-steel castings, specially heat-treated. Three-point support construction with heavy, deep ribs on the underside.

Challenge Semi-Steel Surface Plates are widely used and highly recommended as master plates for many types of testing operations. They are used for checking the accuracy of other plates and as a precision surface for tool making and inspection of parts.

Work, tools, and gage blocks will assume uniform temperature by allowing them to remain on a Challenge Surface Plate for a few minutes before using.

Furnished in a wide range of sizes, as listed below, either **hand-scraped** or precision ground. A wooden cover is supplied with each plate.

SPECIFICATIONS

Stock No. Hand Scraped	Stock No. Precision Ground	Size Inches	Thickness Inches	Shipping Weight
S-354	SG-354	3½ x 4	1½	5 lbs.
S-812	SG-812	8 x 12	2⅞	25 lbs.
S-1015	SG-1015	10 x 15	3⅞	50 lbs.
S-1212	SG-1212	12 x 12	2⅞	45 lbs.
S-1218	SG-1218	12 x 18	3⅞	80 lbs.
S-1224	SG-1224	12 x 24	3⅞	150 lbs.
S-1418	SG-1418	14 x 18	3⅞	85 lbs.
S-1616	SG-1616	16 x 16	3⅞	95 lbs.
S-1818	SG-1818	18 x 18	4¾	165 lbs.
S-1824	SG-1824	18 x 24	5½	235 lbs.
S-2424	SG-2424	24 x 24	5½	325 lbs.
S-2436	SG-2436	24 x 36	6½	475 lbs.

CHALLENGE SURFACE PLATE STANDS

PORTABLE OR STATIONARY



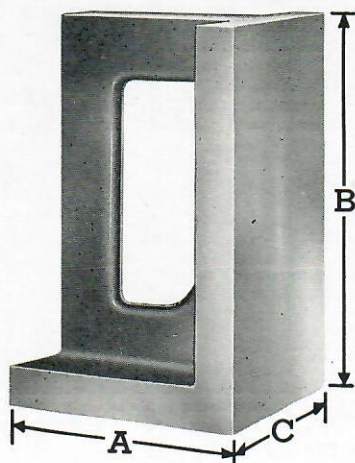
This wheel equipped, all-steel Stand has been developed to meet the growing need for flexibility in Plant Production lines. Permits surface to be easily transported, for various operations, from one plant location to another. The arc-welded stand forms a sturdy base with the solidity of a one-piece unit and will accommodate many plates other than Challenge (*see foot note). Made in three standard sizes, either stationary or wheel equipped.

SPECIFICATIONS

Stock Number		Size	Stand Height	Working Height	Shipping Weight
Wheel Model	Stationary				
SSR-1824	SS-1824	18x24 ins.	30½ ins.	36 ins.	100 lbs.
SSR-2424	SS-2424	24x24 ins.	30½ ins.	36 ins.	125 lbs.
SSR-2436	SS-2436	24x36 ins.	29½ ins.	36 ins.	170 lbs.

* NOTE:—When special Stands are required, other than those made to carry Challenge Surface Plates, it is necessary to supply the exact location of the supports and overall base dimensions of the Surface Plates.

CHALLENGE UNIVERSAL RIGHT ANGLE IRONS



Wherever square reference surfaces are needed Challenge Universal Right Angle Irons will fit the job. The blocks may be placed in almost any position with the work clamped to the face for measuring. Also, may be used as height blocks in measuring large work. An opening in rib provides convenient hand grip.

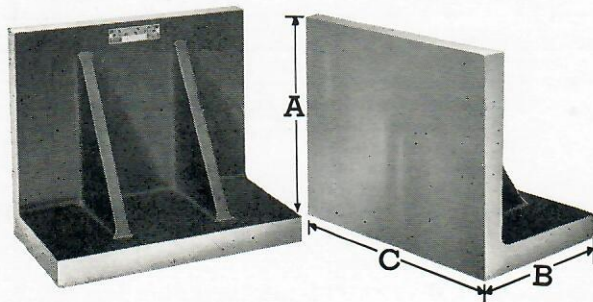
Made of fine-grain special analysis semi-steel, specially heat-treated. Ends and sides are

precision ground both square and parallel. Challenge Universal Right Angle Irons are square and true, but not made to exact size.

SPECIFICATIONS

Stock No.	First Angle (A)	Second Angle (B)	Width (C)	Shipping Weight
U-453C	4 ins.	5 ins.	3¾ ins.	7 lbs.
U-584B	5 ins.	8 ins.	4½ ins.	17 lbs.
U-686	6 ins.	8 ins.	6 ins.	25 lbs.
U-8105B	8 ins.	10 ins.	5½ ins.	35 lbs.

CHALLENGE ANGLE PLATES



Challenge Angle Plates provide a practical and versatile method of clamping and holding work. These plates are made of the highest grade special analysis semi-steel and are precision ground and are square to within .0005 of an inch in 6 inches.

Challenge Angle Plates are made in 22 sizes, ranging from 2½x6x12 inches up to and including 24x24x24 inches, as listed at right.

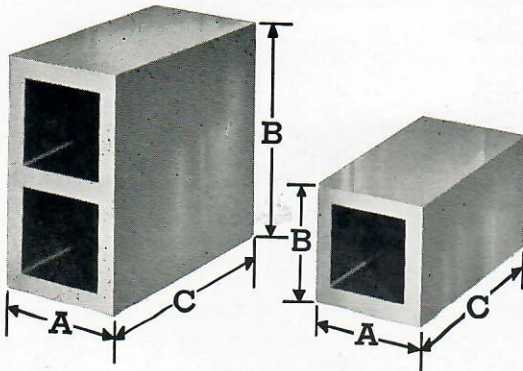
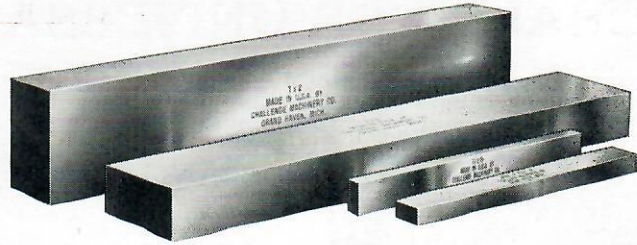
SPECIFICATIONS

Stock No.	Size, Inches A x B x C	Shipping Weight
AP-2B612	2½ x 6 x 12	18 lbs.
AP-2C4CR	2¾ x 4¾ x 4¾	8 lbs.
AP-3B4R	3½ x 4 x 4	6 lbs.
AP-3C4CR	3¾ x 4¾ x 4¾	9 lbs.
AP-456	4 x 5 x 6	12 lbs.
AP-4612	4 x 6 x 12	30 lbs.
AP-4B58	4½ x 5 x 8	18 lbs.
AP-567	5 x 6 x 7	18 lbs.
AP-6RR	6 x 6 x 6	20 lbs.
AP-6R8	6 x 6 x 8	24 lbs.
AP-678	6 x 7 x 8	28 lbs.
AP-6810	6 x 8 x 10	55 lbs.
AP-6186	6 x 18 x 6	65 lbs.
AP-789	7 x 8 x 9	40 lbs.
AP-8106	8 x 10 x 6	45 lbs.
AP-81012	8 x 10 x 12	80 lbs.
AP-9RR	9 x 9 x 9	60 lbs.
AP-12RR	12 x 12 x 12	125 lbs.
AP-12R15	12 x 12 x 15	160 lbs.
AP-18RR	18 x 18 x 9	180 lbs.
AP-18RR	18 x 18 x 18	350 lbs.
AP-24RR	24 x 24 x 24 *	960 lbs.

* Planer Finish.

SOLID PARALLELS

Challenge Solid Parallels are made of special analysis semi-steel, precision ground to an accuracy of within .0005 of an inch plus or minus in thickness and width. All sizes are parallel to within .00025" in 6 inches. Special heat treated.



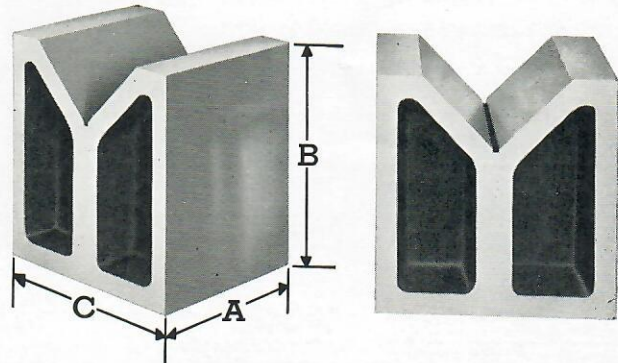
SPECIFICATIONS

Stock No.	Size, Inches	Net Weight
SP-256	1/4 x 5/8 x 6	.27 lbs.
SP-276	1/4 x 7/8 x 6	.38 lbs.
SP-356	3/8 x 5/8 x 6	.40 lbs.
SP-386	3/8 x 1 x 6	.70 lbs.
SP-466	1/2 x 3/4 x 6	.70 lbs.
SP-486	1/2 x 1 x 6	.85 lbs.
SP-564	5/8 x 3/4 x 4	.55 lbs.
SP-574	5/8 x 7/8 x 4	.60 lbs.
SP-5108	5/8 x 1 1/4 x 8	1.77 lbs.
SP-6128	3/4 x 1 1/2 x 8	2.5 lbs.
SP-81212	1 x 1 1/2 x 12	5.1 lbs.
SP-81612	1 x 2 x 12	6.8 lbs.
SP-10712	1 1/4 x 1 3/4 x 12	7.5 lbs.
SP-10812	1 1/4 x 2 x 12	8.5 lbs.

BOX PARALLELS

Challenge Box Parallels are made from the highest grade of special analysis semi-steel castings, heat treated and precision ground all over to the sizes given, within limits of plus or minus .0005" (on A and B dimensions). All sizes are parallel to within .00025" in 6 inches and square to within .0005" in 6 inches.

The sizes listed are not made in pairs, but will pair up within the limits.



SPECIFICATIONS

Stock No.	Size, Inches A x B x C	Shipping Weight
BP-1B24	1 1/2 x 2 x 4	4 lbs.
BP-1B312	1 1/2 x 3 x 12	10 lbs.
BP-22B5	2 x 2 1/2 x 5	8 lbs.
BP-346	3 x 4 x 6	12 lbs.
BP-3B57	3 1/2 x 5 x 7	18 lbs.
BP-446	4 x 4 x 6	15 lbs.
BP-464	4 x 6 x 4	13 lbs.
BP-466	4 x 6 x 6	19 lbs.
BP-4B57	4 1/2 x 5 x 7	19 lbs.
BP-4B89	4 1/2 x 8 x 9	45 lbs.
BP-510R	5 x 10 x 10	70 lbs.
BP-612R	6 x 12 x 12	98 lbs.
BP-121012	12 x 10 x 12	145 lbs.
BP-12R24	12 x 12 x 24	425 lbs.
CUBE BOX PARALLELS		
CBP-4	4 x 4 x 4	12 lbs.
CBP-6	6 x 6 x 6	27 lbs.
CBP-8	8 x 8 x 8	70 lbs.
CBP-10	10 x 10 x 10	125 lbs.

V-BLOCKS

Challenge V-Blocks are recommended for supporting shafts and other cylindrical work when drilling, checking, inspecting, etc.

The blocks are made of special analysis semi-steel castings. They are special heat treated and precision ground to a V accuracy of .0005-inch. Ribbed sides provide strength with light weight and furnish a convenient means for clamping.

SPECIFICATIONS

Stock No.	Size, Inches A x B x C	Diametrical Capacities	Shipping Weight per pair
VB-22B5	2 x 2 1/2 x 5	3 1/2 in.	15 lbs.
VB-33B6	3 x 3 1/2 x 6	4 3/4 in.	30 lbs.
VB-667	6 x 6 x 7	5 1/2 in.	90 lbs.
VB-688	6 x 8 x 8	7 in.	130 lbs.
VB-888	8 x 8 x 8	7 in.	150 lbs.
VB-10RR	10 x 10 x 10	8 3/8 in.	255 lbs.
VB-12RR	12 x 12 x 12	11 3/4 in.	425 lbs.

CHALLENGE

ABRASIVE CUT-OFF MACHINE



Just What the Average Shop Needs —Cuts any Metal, Hard or Soft



Here's a handy, moderately-priced utility machine—a self-contained unit that works faster, easier, and far more economically than a hack saw. Increases production. It handles any metal, soft or hard, tubular or solid—will even cut hardened tool steel. No expensive blades to break.

The Challenge Abrasive Cut-Off Machine can be plugged into any light socket. It has a capacity up to one inch round. Equipped with elastic cut-off wheel $6\frac{1}{2} \times 2 \times \frac{1}{2}$ inches. Adjustable table is 15×14 inches. Base is cast iron. Adjustable Miter Gage is included for cutting-off operations. Equipped with belt and safety guard over cut-off wheel. Gages are conveniently located and easily adjusted. Spindle is the ball-bearing type.

No.	SPECIFICATIONS	Net Weight	Shipping Weight
AB-1	Challenge Abrasive Cut-Off Machine, without stand; with wheel and 110 or 220 volt 60 cycle, single phase, AC motor..	80 lbs.	110 lbs.
AB-1-S	Steel stand for Abrasive Cut-Off Machine; $16 \times 22 \times 31$	60 lbs.	80 lbs.

THE CHALLENGE MACHINERY COMPANY
GRAND HAVEN, MICHIGAN